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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/781,689	02/20/2004	Go Miya	500.42015VX1	3698
20457	7590	06/15/2004	EXAMINER	
ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-9889			HASSANZADEH, PARVIZ	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/781,689

Applicant(s)

MIYA ET AL.

Examiner

Parviz Hassanzadeh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 9-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 10/229,072.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/04
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 9-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nabeshima et al (JP 6-275578-A) in view of Sakamoto et al (JP 58-200,539-A).**

Nabeshima et al teach a plasma processing apparatus (Fig. 3) for applying plasma treatment to a sample arranged in a vacuum process chamber 3, including plasma generation electrodes (means) 8 and 7 for generating plasma inside the vacuum process chamber 3 and process gas introduction port (means) 4 for introducing a process gas into the chamber 3, the apparatus further comprising:

an ultrasonic oscillator 1 for imparting mechanical agitation to the apparatus in order to separate foreign matters adhered to the internal surface of the chamber 3 (abstract). The

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apparatus as shown in Fig. 3 also includes a process monitoring system including light source 16 and sensing device 20.

Nabeshima et al fail to disclose detecting mechanical oscillation generated by the ultrasonic oscillator.

Sakamoto et al teach a semiconductor processing apparatus (Fig. 2) for applying plasma treatment to a sample 5 arranged in a vacuum process chamber 1, including plasma generation electrode (means) 7 for generating plasma inside the vacuum process chamber 1 and process gas introduction port (means) (not shown) for introducing a process gas into the chamber 1, the apparatus further including:

a process monitoring system comprising a transmitter 9 coupled to an ultrasonic electric pulse oscillator 13 for feeding ultrasonic pulses into the chamber; and receiver 10 coupled to an oscilloscope 12 (*detecting mechanical oscillation generated by the oscillation means in the processing apparatus*) wherein the intensity of a measured signal 15 is compared with a reference signal 14 and is correlated with a state of the processing (abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the process monitoring system as taught by Sakamoto et al in the apparatus of Nabeshima et al as an art recognized equivalent process monitoring system. See MPEP 2144.06, Art Recognized Equivalent for the Same Purpose, Substituting Equivalents Known for the Same Purpose (in re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982)).

*Further regarding claims 9, 13, 14, 16:* It is noticed that the signal received by the oscillation monitoring system of Sakamoto et al would inherently include the mechanical oscillation generated by the oscillator 1 of Nabeshima et al.

*Further regarding claims 10, 11:* as shown in Fig. 3 of Nabeshima et al, the ultrasonic oscillator is arranged inside the chamber 3 and imparting mechanical oscillation to electrode 8 provided inside the chamber.

*Further regarding claims 12:* as shown in Fig. 2 of Sakamoto et al the transmitter and the receiver are facing each other; and the changes in the intensity of signal 15 with respect to reference signal 14 is correlated with a state of the processing. Further the measured signal would inherently include the mechanical oscillation generated by the ultrasonic oscillator 1 of Nabeshima.

*Further regarding claim 15:* It is held in *re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) that a mere duplication of parts has no patentable significance unless a new and unexpected result is produced therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add an additional ultrasonic oscillator 1 inside the chamber above the upper electrode in order to ease the separation of foreign matters from the upper electrode; and to incorporate additional process monitoring system in order to monitor the state of the plasma along the axial direction of the plasma.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bennett et al (US Patent No. 5,387,777), Hasegawa et al (US Patent No. 5,795,399); Madan et al (US Patent No. 6,214,706 B1); and Madan et al (US Patent No. 6,427,622 B2) teach plasma processing apparatus including an oscillator for imparting mechanical oscillation to the apparatus.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Parviz Hassanzadeh whose telephone number is (571)272-1435. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (571)272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*P. Hassanzadeh*  
Parviz Hassanzadeh  
Primary Examiner  
Art Unit 1763

June 8, 2004